

**IDENTIFYING INTENTIONALLY DUPLICATIVE PUBLIC
COMMENTS SUBMITTED TO PROPOSED FEDERAL RULES**

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ABSTRACT

Since the public commenting process for proposed federal regulations became primarily web-based, the number of rules receiving extremely high comment volumes has increased substantially; raising concerns about whether computer-generated comments designed to appear as if they represent the input of ordinary citizens could be distorting the regulatory process. As one example, the Consumer Financial Protection Bureau's (CFPB's) Payday, Vehicle Title, and Certain High-Cost Installment Loans Proposed Rule ("Payday Rule") received over one million comments, many of which appear to be from individuals, but are highly similar in wording and structure. Using a sentence-level document feature matrix (DFM) to identify repeated phrases, this analysis found that nearly 70 percent of the reviewed comments were moderately to highly suspicious duplicates. Drawing on the characteristics of these duplicates, this paper presents practical alternatives for federal agencies to prevent and respond to similar risks against the regulatory commenting process in the future.

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1. INTRODUCTION

Public commenting on proposed rules to be issued by United States federal government agencies is an essential step in the regulatory process. Through these comments, agencies gain valuable technical input while also identifying opportunities to refine and clarify the rule language. In addition, the commenting process gives individuals and organizations advance awareness of new regulations that may affect them and the opportunity to contribute to the policy-making process. Despite the importance of this process and the far-reaching consequences of federal rulemaking, public awareness of commenting options through the Federal Register and Regulations.gov is low; with most proposed rules receiving only a few comments from their most invested stakeholders. However, in recent years some proposed rules have begun generating over a million comments each, straining agency resources and delaying the implementation of final rules.

The exponential growth in comment volumes for some high profile rules has been primarily linked to the transition from a paper-based process used almost exclusively by industry lobbyists, advocacy groups, and institutions to a web-based process beginning in the early 2000s.¹ The use of electronic formats (i.e., Regulations.gov and email) reduced the time and effort needed to submit comments, which achieved its intended purpose of encouraging increased participation from a broader range of individuals and organizations. However, these lowered barriers also had an unintended consequence in changing the nature of the comments received. Although Regulations.gov specifically states that submitting a comment is not the same as voting and agencies are not required to consider the number of

¹ Lauren Moxley, "E-Rulemaking and Democracy," *Administrative Law Review* 68, no. 4 (2016): 661.

comments received for and against a rule as part of their analysis,² industry and advocacy groups have leveraged social media and other methods to encourage their supporters to flood high-profile rules with mass mailings and form letters arguing their preferred positions. These comments, which typically only repeat a stock phrase or express general support or opposition, tend to far outnumber the more substantive comments on specific provisions of the proposed rule that this process is intended to generate.³

While concerns about the changing composition and volume of comments submitted on proposed rules have been raised since shortly after the creation of Regulations.gov,⁴ these concerns have taken on new urgency in parallel with increased awareness and attention to the multiple ways that critical online systems are being targeted and abused. From allegations of Russian interference in the 2016 presidential election to ongoing waves of misinformation spread by millions of centrally-controlled social media accounts (e.g., “spambots”), it has become clear that significant resources are being deployed with the intention of disrupting key democratic processes. This understanding leads to natural questions about whether the extremely high comment volumes experienced by some proposed rules within the past few years could potentially be a symptom of similar attacks.

In order to examine comments submitted to Regulations.gov for the CFPB Payday, Vehicle Title, and Certain High-Cost Installment Loans Proposed Rule (“Payday Rule”) in 2016, this analysis uses a sentence-level document frequency matrix (DFM) to identify unusual phrases exactly duplicated across hundreds of comments each. Based on these

² “Tips for Submitting Effective Comments,” Regulations.gov, accessed July 29, 2017, https://www.regulations.gov/docs/Tips_For_Submitting_Effective_Comments.pdf.

³ Stuart Shulman, “Whither Deliberation? Mass e-Mail Campaigns and U.S. Regulatory Rulemaking,” *Journal of E-Government*, Vol. 3(3) (2006):45. doi:10.1300/J399v03n03_03.

⁴ Shulman, “Whither Deliberation?,” 55.

phrases, it was found that more than half, and possibly as high as 70 percent, of the publicly posted comments reviewed display characteristics that strongly imply they do not originate from individual citizens and were in fact created by a central source. Based on the characteristics of these suspicious comments, this paper concludes with simple steps that the government-wide eRulemaking Program, chaired by the Environmental Protection Agency (EPA) and Office of Management and Budget (OMB), could take to strengthen and protect the public commenting process against similar threats in the future.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1. The Proposed Rule Commenting Process

Since 1936, federal agencies have been required to publish proposed rules and regulations for public awareness and comment through the Federal Register. Under Section 553 of the Administrative Procedure Act, federal agencies must not only solicit public comments on their proposed rules, but also must demonstrate that the comments have been considered before they publish the final rule.⁵ Despite the very significant impacts these rules and regulations can have on businesses, other organizations, and individual citizens, very few Americans typically participate in the

commenting process. For example, as shown in Figure 1, the median number of comments received on proposed rules posted to Regulations.gov in 2016 is 8 and the third quartile is only 47.⁶

Figure 1: 2016 Docket Comments Overview

Summary Statistics	
Minimum	0
1 st Quartile	2
Median	8
Mean	10,666
3 rd Quartile	47
Maximum	4,381,009

⁵ "Public Comments Make a Difference Fact Sheet," Regulations.gov, accessed July 29, 2017, https://www.regulations.gov/docs/FactSheet_Public_Comments_Make_a_Difference.pdf.

⁶ Regulations.gov, Docket Information API [JSON data file], accessed June 23, 2017, <https://api.data.gov/regulations/v3/docket>.

Examination of the comments on proposed rules is an area of limited prior research. In addition to low public awareness of the Federal Register, there have also been technical limitations to accessing the information. For most of the 20th century, comments could only be provided by mail or orally at hearings and could only be viewed by requesting physical copies from the federal agency. Allowing the public to directly submit and view comments electronically through the internet (commonly referred to as "e-Rulemaking") began less than 20 years ago. In addition, the analytical methods and tools needed to quickly and effectively analyze the amount of unstructured text data created through this process have only become widely available within the past 10 years.

A small series of articles from the late 1990s to the early 2000s focused on participation in the rulemaking commenting process. In a 1998 study (prior to the rise of e-Rulemaking), Golden examined the sources of Federal Register comments and found that 67 to 100 percent of comments on proposed EPA and National Highway Transportation Safety Administration (NHTSA) rules came from industry groups and corporations.⁷ In a 2005 study, Furlong and Kerwin also found that lobbyists and industry groups participate most heavily in the commenting process. They noted that trade associations were the most likely stakeholder group to actively monitor information posted to the newly created Regulations.gov website and to leverage online tools for engaging in the process.⁸ In a 2007 article, McKay and Yackee additionally found that lobbyists and industry groups participate most heavily in the commenting process and that they do so because agencies do modify

⁷ Marissa Martino Golden, "Interest groups in the rule-making process: Who participates? Whose voices get heard?" *Journal Of Public Administration Research & Theory* 8, no. 2 (1998): 249.

⁸ Scott Furlong and Cornelius Kerwin, "Interest Group Participation in Rule Making: A Decade of Change," *Journal Of Public Administration Research & Theory* 15, no. 3 (2005): 368.

their rules and regulations to favor the position of groups who dominate the number of comments submitted.⁹

2.2. e-Rulemaking and the Rise of Blockbuster Dockets

In the late 1990s, federal agencies began experimenting with new ways of using information technology to streamline and enhance the regulatory commenting process. These efforts were pushed forward and standardized under the E-Government Act of 2002, which led to the creation of the centralized Regulations.gov website. Prior to 2003, only the most highly controversial rules resulted in more than a few dozen comments and the maximum appeared to be in the hundreds of thousands of comments.¹⁰ However, as online commenting systems have reduced the burden and cost of submitting comments, the number of "blockbuster" rules receiving extremely high numbers of comments is increasing in both frequency and magnitude. For example, of the 1,652 proposed rules posted for comment in 2016, 80 (4.8 percent) exceeded 10,000 comments and 25 (1.5 percent) exceeded 100,000 comments.¹¹ The number of extreme blockbusters (i.e., rules receiving more than 1 million comments) is also growing. Significant attention was paid in 2014 when the Federal Communication Commission's (FCC's) proposed Net Neutrality rule received more than 3.9 million comments, far exceeding any previous volume.¹² However, since then, it has become expected that at least a few dockets each year will receive over one million comments and there were four such cases in 2016 alone.¹³

⁹ Amy McKay and Susan Webb Yackee, "Interest Group Competition on Federal Agency Rules." *American Politics Research* Vol 35 Issue 3 (2007): 350, doi: 10.1177/1532673X06296571.

¹⁰ Cary Coglianese, "Information Technology and Regulatory Policy: New Directions for Digital Government Research." *Social Science Computer Review* Vol 22, Issue 1 (2004): 86. doi: 10.1177/0894439303259890.

¹¹ Regulations.gov. Docket Information API [JSON data file].

¹² Moxley, "E-Rulemaking and Democracy," 661.

¹³ Regulations.gov. Docket Information API [JSON data file].

Although the move to e-Rulemaking was intended to improve the regulatory process by increasing the involvement of informed and interested citizens and organizations outside of the Washington, DC area, much of the growth in comment volume has been attributed to duplicative, non-substantive form letters and mass-mail campaigns rather than increases in deliberative participation by engaged citizens and stakeholders.¹⁴ These results have raised concerns about the new burden being placed on agencies compared to the value they are receiving. As described by Stuart Shulman in a 2006 article examining the implementation of e-Rulemaking, "unreflective tirades are the bulk of the comments and they drown out the people whose carefully drawn comments might actually make a difference."¹⁵

2.3. The CFPB Payday Rule

The CFPB Payday Rule was opened for comment on July 22, 2016 and closed on October 7, 2016. During that time, 1,335,693 total comments were received. Although this rule was only the third largest in terms of 2016 comments received, it presents an interesting case study into a new area of examination for the commenting process. Even before the close of the Payday Rule commenting period, observers began noting unusual patterns in the comments displayed publicly through Regulations.gov. On September 26, 2016, Allied Progress, a left-leaning consumer watchdog organization, released a preliminary analysis of the comments highlighting near, but not exact, duplication in the phrasing of hundreds of comments ostensibly submitted by individual citizens.¹⁶ Unlike form letters and mass mailings, which are easily identifiable based on their structure and the use of a consistent key

¹⁴ Shulman, "Whither Deliberation?," 45.

¹⁵ Shulman, "Whither Deliberation?," 58.

¹⁶ "CFPB Must Closely Scrutinize Comments Opposing Proposed Payday Lending Rule," Allied Progress, accessed July 29, 2017, <https://alliedprogress.org/news/cfpbcomment/>.

phrase, the suspect comments highlighted by Allied Progress appear unrelated to each other in their design; raising the specter of fraudulent intent.

Given the historically low overall levels of awareness and participation in the commenting process, the idea of interest groups intentionally submitting fabricated comments designed to distort the process does not appear to have been an area of much prior concern or research. However, e-Rulemaking has significantly lowered barriers for organizations to quickly and easily submit large batches of comments through web interfaces. In addition, automated computer algorithms able to replicate the actions of a human thousands of times each minute could theoretically create and submit a huge volume of comments at very little cost to an organization. Given that members of the small-dollar lending industry argued the proposed Payday Rule would force many of their businesses to close, incentives for using these kinds of activities to sway the regulatory process do exist.¹⁷

2.4. Finding and Handling Duplicative Public Comments

Concerns about the potential for excessive, minimally valuable comments to overwhelm the regulatory process have been discussed since the advent of e-Rulemaking. For example, Fred Emery, a former Director of the Federal Register, and his partner noted in a 2005 article that "under the current e-Rulemaking plan, interest groups spend money on the latest software to generate thousands of e-comments, and agencies are forced to invest in sophisticated software that will enable them to mine the thousands of comments to identify the ten salient points."¹⁸ Natural Language Processing (NLP) techniques are ideal for

¹⁷ Fred Williams, "Robo-Comments on Payday Loans Clog Regulation-Making Machinery," *CreditCards.com Credit Card News*, October 14, 2016, Accessed July 29, 2017, <http://www.creditcards.com/credit-card-news/robo-comments-payday-loan-cfpb-regulation.php>.

¹⁸ Fred Emery and Andrew Emery, "A Modest Proposal: Improve ERulemaking by Improving Comments," *Administrative and Regulatory Law News*, 31(1) (2005): 8.

addressing the challenges of both intentional and non-intentional duplication in the e-Rulemaking process as they provide alternatives for using the comment text content itself to support duplicate and near-duplicate identification without the need for manual coding or manipulation. In particular, recent advances in plagiarism detection methods appear to have relevant applications for supporting improvements to the comment review process.

Similar to the patterns of highly similar suspicious comments identified by Allied Progress in the CFPB Payday Rule dataset, plagiarists often modify copied passages with synonyms and other slight wording changes in order to make it more difficult for readers to identify the source work. Therefore, several detection methods have been created that focus on ways to accurately identify similar passages where small differences in wording or structure exist.¹⁹ For example, in 2011, Efstathios Stamatatos developed an approach that reverses the typical NLP process of dropping stopwords (e.g., the, as, you, from) and instead focuses on comparing stopwords between passages based on the idea that plagiarizers are less likely to alter stopwords with synonyms. This approach was found to accurately detect plagiarized passages about 67 to 88 percent of the time. In addition, Miranda Chong et al examined multiple NLP methods, such as trigram similarity measures and Naive Bayes classification, to successfully identify near-duplicate passages with precision rates between 50 to 70 percent.²⁰ In line with these successful methods for identifying similar text passages, this research is intended to determine if basic NLP approaches can be used to effectively identify key characteristics of suspicious comments that appear to be from individuals, but may actually be generated from central sources.

¹⁹ Efstathios Stamatatos, " Plagiarism Detection Using Stopword n-grams," *Journal of the Association for Information Science and Technology* 62, no. 12 (2011): 2512.

²⁰ Miranda Chong, Lucia Specia, and Ruslan Mitkov, "Using Natural Language Processing for Automatic Detection of Plagiarism," *Proceedings of the 4th International Plagiarism Conference (IPC-2010)*, 2010.

3. DATA AND METHODS

3.1. Data Source

The Regulations.gov website provides a public application programming interface (API) for accessing high-level docket metadata, comment metadata, and the comment narratives themselves for each proposed rule. However, the Regulations.gov website notes that, while agencies review all comments received, they have wide latitude to exclude comments that appear to be duplicates, form letters from mass-mail campaigns, or that contain inappropriate language from public posting.²¹ Of the 1,335,693 total comments received on the Payday Rule during the comment period, only 202,848 were accessible through the Regulations.gov API.²² While CFPB has not publicly explained why it withheld 85 percent of the comments received, the assumption is that they fall within the mass-mail/form letter category.

Comments that are directly entered into the Regulations.gov system through a web form are recorded as free text within a field in the comment record and are obtainable in a JavaScript Object Notation (JSON) format directly through the API call. Comments provided as attachments must be scraped separately from the Regulations.gov website and then merged into the API dataset. Of the 202,848 Payday Rule public submission comments available, 67,298 referred to attachments. In several cases, a single comment record ID referred to multiple portable document format (PDF) attachments. In 38 cases, the

²¹ "Payday, Vehicle Title, and Certain High-Cost Installment Loans Proposed Rule," Regulations.gov, accessed July 29, 2017, <https://www.regulations.gov/document?D=CFPB-2016-0025-0001>.

²² On October 5, 2017, CFPB updated the total number of comments received on the Payday Rule to 1,413,785 to reflect an additional 78,092 comments accepted after the formal comment period closed. As these comments were not available at the time this analysis was performed, they are excluded from the results.

attachment links returned an error, therefore, no comment text was available for those records.

3.2. Data Selection

In addition to records with attachment link errors, any comment records with fewer than 50 characters in the comment text field after merging in the PDF attachments were excluded from the dataset as having limited research value. The majority of the excluded comment records refer to images of hand-written notes that could not be accurately converted from PDF attachments by optical character recognition (OCR); leaving the comment text field empty or containing only random characters. In total, 5,974 records were excluded based on comment length. An additional 12,340 comments with longer character counts were also removed due to the presence of unusual character strings that were also found to indicate OCR translation errors of handwritten comments. Given that handwritten comments are highly unlikely to be the type of intentionally duplicative comments this analysis is concerned with, their exclusion should not have an impact on the accuracy of suspicious comment identification.

As the final step in the data selection process, any records that were identified as being part of a mass mailing campaign, defined as those records with a "number of comments received" field value greater than one, were also removed from the working set. These 253 records are clearly identified with comment titles such as "Mass Mail Campaign 209" confirming their type. While these duplicative mass mailing campaign comments pose certain challenges for agencies attempting to review all submissions, they are not the primary focus of this analysis and their inclusion in the dataset could overwhelm efforts to identify duplicative, centrally-created comments masquerading as individual submissions due to the

high frequencies of stock phrases they include. Ultimately, these selection steps left a total working set of 184,281 comments for further analysis.

3.3. Data Classification

In order to support the identification of particular characteristics that may be associated with intentionally duplicative comments, each comment in the working set was also classified by the submitter type. While the Regulations.gov API includes metadata fields for the submitter name and organization, the quality of the data found in these fields is unreliable. Regulations.gov does not apply validation controls or require confirmation of submitter information at the time the comment is created. Therefore, in many cases for both fields, the value is either null or contains an unusable dummy value (e.g., Anonymous, Myself, Not an Organization, Citizen). However, the comment title field was found to provide some additional name and organization information not contained in the relevant metadata fields (e.g., Comment Submitted by Anonymous Anonymous, VOICE OKC) that could also be used to support classification for certain records.

Using hand-coding supported by SQL keyword matching, each of the comments was classified with one of seven submitter type codes, including Government Representative/Organization, Individual, Non-Profit/Religious/Advocacy Group, Other Business, Payday/Installment Lender, Professional/Industry Association, and Traditional Bank/Credit Union. "Individual" is the default category for any records that could not be confirmed as belonging to one of the six organization types or where a comment's metadata did not include an organization name in the comment title or organization fields, regardless of whether an organization name appears within the body of the comment text.

3.4. Document Frequency Matrix Analysis

Using the R `quanteda` package,²³ the working set of comments was converted into a corpus object. A sentence-level document frequency matrix (DFM) was then applied to identify exact sentences that appeared in multiple comments. Among the top phrases in terms of usage frequency, those with fewer than 30 characters were found to represent common letter-writing phrases with minimal value for identifying duplication (e.g., "sincerely yours", "thank you for your time"). Therefore, these short phrases were excluded. Among the remaining phrases, those that appear in at least 100 comments each were selected for use in identifying potentially duplicative comments.

For each of the selected suspect phrases, the `str_detect` function from the R `stringr` package²⁴ was then applied to all comments in the working set to determine whether or not the suspect phrase appeared in the comment body. Based on the sum total of how many suspect phrases occurred in the text, the comments were categorized as either not suspicious if none of the suspect phrases occurred, moderately suspicious if one to three of the suspect phrases occurred, or highly suspicious if four or more suspect phrases occurred.

4. RESULTS

4.1. Suspect Phrases

4.1.1. Exact Phrase Duplication

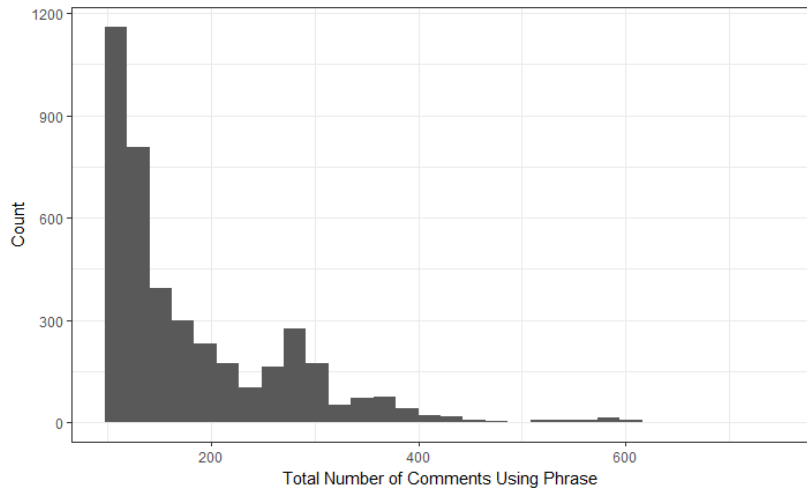
The sentence-level DFM identified 4,114 phrases that occurred in a minimum of 100 comments each up to a maximum of 727 comments. As shown in Figure 2, the suspect

²³ Kenneth Benoit, et. al., "quanteda: Quantitative Analysis of Textual Data," R package version: 0.9.9-50, <http://quanteda.io>, (2017).

²⁴ Hadley Wickham "stringr: Simple, Consistent Wrappers for Common String Operations," R package version: 1.2.0, <https://github.com/tidyverse/stringr>, (2017).

phrases are most commonly used in 100 to 150 comments each. These suspect sentences, which intentionally exclude common short expressions, have an average character count of 93.6 that reflects

Figure 2: Distribution of Suspect Phrase Occurrences



relatively complex sentence structures and content. For example, the suspect phrase “Your assumption that I am incapable of making financial decisions that make sense for me and my family is offensive and wrong,” which appears in 715 comments, is representative of most suspect comments in terms of structure and tone. While simple phrases like “I support it” could easily be cases of naturally occurring duplicates submitted by different individuals, it is unlikely that hundreds of unconnected people would independently create the types of phrases this analysis identified using the exact same wording and punctuation. Therefore, the risk of receiving a false positive result in the identification of suspicious, intentionally duplicative comments using these phrases appears low.

Among the suspect phrases duplicated in hundreds of comments each, clusters of similar content appear. For example, 274 phrases express some variation on the idea that the government should not be involved in regulating payday lenders at all or interfering with people’s ability to make their own financial choices. Other groups of suspect phrases oppose specific provisions of the proposed rule, such as the 41 sentences arguing against placing a cap on the number of short-term loans an individual could take out within a certain time

period. Finally, most other suspect phrases are focused on the ways that payday loans help individuals pay for necessities, including 124 suspect phrases that mention insurance, 104 phrases that discuss groceries, and 77 that refer to water or utility bills.

4.1.2. Partial Phrase Duplication

Within the group of exact duplicate phrases identified by the DFM, this analysis also found multiple instances of mostly duplicative phrases replacing synonyms for some words; a common technique for attempting to hide duplication. For example, as shown in Figure 3 below, the most commonly found cases use three to four different synonyms for “payday loans” encased within sentences that are otherwise exact duplicates. Several other partially duplicated comment groups simply add and remove spaces and hyphens to alternate between “payday,” “pay-day,” and “pay day” without any other wording changes.

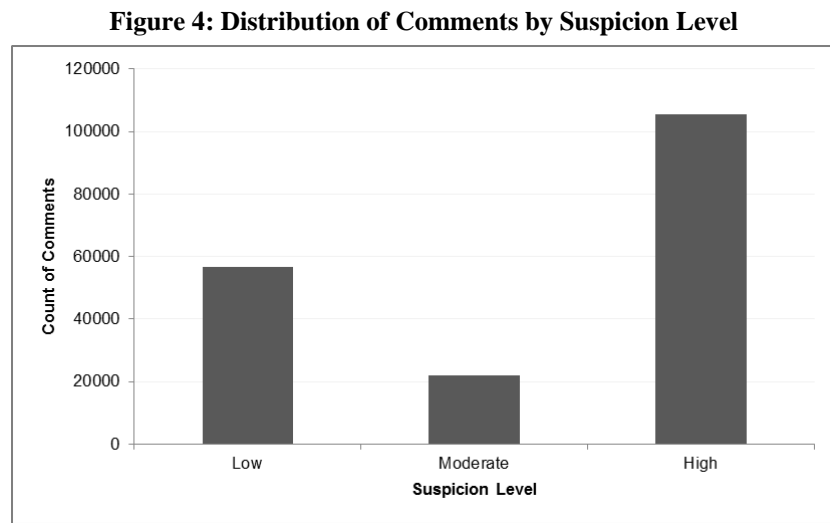
Figure 3: Partially Duplicated Suspect Phrases Example

Number of Comments	Suspect Phrase
118	A mandatory waiting time between <u>payday loans</u> could drastically affect my credit.
116	A mandatory waiting time between <u>cash advances</u> could drastically affect my credit.
111	A mandatory waiting time between <u>pay day advances</u> could drastically affect my credit.

Based on the existence of these partially duplicated sentences, it is possible other phrases appearing in a total number of comments just below the 100 comment threshold would have been included in the suspect phrase list if taken together. However, given the high number of suspect phrases identified above the review threshold, it is unlikely that the exclusion of these partially duplicated phrases had any significant impact on the identification of suspicious comments.

4.2. Distribution of Comments by Suspicion Level

As shown in Figure 4, 56,821 comments (30.8 percent) posted to the Payday Rule do not include any of the identified suspicious phrases.



While these types of

comments may still potentially include duplicative sentiments, they are the least likely to represent examples of intentional, centrally-created duplication. Moderately suspicious comments, which contain between one and three of the identified suspicious phrases, include 21,890 (11.9 percent) of the working set. Comments in this group require more detailed analysis to confirm whether or not they are likely intentional duplicates. Finally, 105,570 (57.3 percent) of the working set comments were identified as highly suspicious based on the presence of four or more suspect phrases. While this group is the largest set identified, these comments have more in-group similarities than the other two suspicion groups; demonstrating several characteristics that strongly imply they originate from a central source rather than from individuals.

4.3. Comment Characteristics by Suspicion Level

4.3.1. Low Suspicion Comments

Figure 5 illustrates that the comments categorized to the low suspicion level based on the absence of any suspect phrases appearing in the text include examples of all possible

options in terms of submission method, appearance, length, and topic areas. This supports the assumption that these comments are most likely not intentionally-created duplicates. While an organization attempting to create fraudulent comments appearing to be from different individuals could theoretically create them in multiple formats to further disguise their source, the costs and effort related to doing so would be higher than methods to automatically generate the comments in a standard structure.

Figure 5: Low Suspicion Comment Examples

Email Submission	Scanned Document Submission
CFPB-2016-0025-99995	CFPB-2016-0025-135236
<p>From: LJ Cohen To: CFPB.FederalRegisterComments Subject: Swiftly Implement the Predatory Payday Lending Rule (Docket No. CFPB-2016-0025) Date: Monday, August 01, 2016 9:55:30 AM</p> <hr/> <p>Docket No. CFPB-2016-0025</p> <p>Dear Director Cordray,</p> <p>As an American and as a Reform Jew, thank you for releasing a strong payday lending rule. I urge you to strengthen the rule and ensure its quick implementation. These rules will help ensure that lending is a tool to help lift people up, and not to force them into unsustainable cycles of debt.</p> <p>Ideally, everyone would have access to credit and loans, regardless of income, citizenship, or race. However, the reality is that not all borrowers can obtain loans from the prime market with competitive interest rates. As a result, too many borrowers become victims of "predatory lending," and unethical lenders take advantage of less credit-worthy borrowers. Among the most vulnerable victims are impoverished individuals, rural borrowers, people on fixed incomes, and women, minorities, seniors and military service personnel. Student borrowers without adequate financial literacy are also vulnerable. A study by the U.S. Department of Housing and Urban Development found that predatory lending practices are three times as likely in low-income communities and five times as likely in black communities as in white communities. Similarly, a 2011-2013 federal study assessed that minorities were charged higher interest on car loans than white borrowers.</p>	<p>September 26, 2016</p> <p>The Honorable Richard Cordray Director Consumer Financial Protection Bureau 1700 G Street N.W. Washington, DC 20552</p> <p>FederalRegisterComments@cfpb.gov</p> <p>Re: Arizonans for Responsible Lending Coalition Comments on Proposed Rule-making on Payday, Vehicle Title, and Certain High-cost Installment Loans</p> <p>Docket Number CFPB-2016-0025 or RIN 3170-AA40</p> <p>Dear Director Cordray:</p> <p>We file this comment in response to the Consumer Financial Protection Bureau's ("CFPB") proposed rule on payday, vehicle title, and certain high cost installment loans. Thank you for the opportunity to submit comments on this important issue. The rule must</p>
Regulations.gov Web Form Submission	
CFPB-2016-0025-107906	CFPB-2016-0025-53337
<p>Comment</p> <p>I have a lot of child support no longer married but this was a easy option for me to help me get extra money without all the hassle would appreciate if you let them remained open</p>	<p>Comment</p> <p>Hello, my name is Michelle, I am an office worker in Albuquerque, New Mexico.</p> <p>I need/use short term loans from checkmate in order to avoid overdraft fees from my bank. I also use them in order to prevent utilities from getting shut off.. Or for personal use and car repairs when money is tight that week.</p> <p>If you took this option away from me, I would have no other choice but to have overdraft fees. Smaller loan companies such as checkmate are the only places where I can receive help from in an emergency.</p>

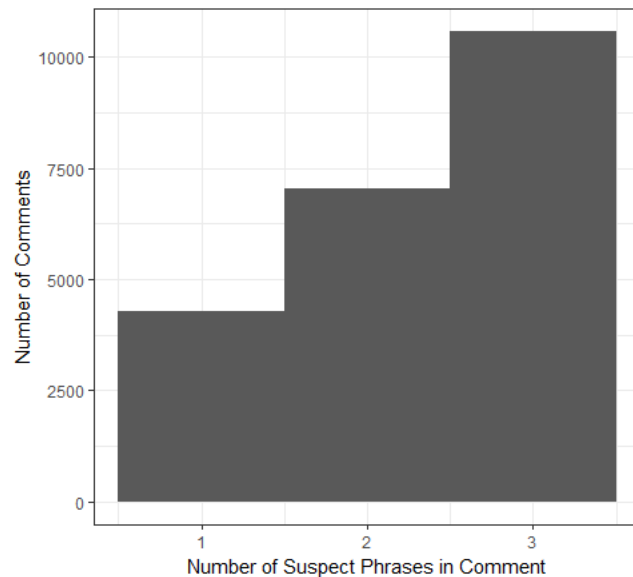
4.3.2. Moderate Suspicion Comments

Comments containing one to three of the suspect phrases were categorized as moderately suspicious. This category is the most difficult to definitively identify as either the work of unique individuals or a single source using automated methods. The comment characteristics in this group are similar to those found in the low suspicion group in terms of

overall structural diversity, however, the appearance of one or more of the suspect phrases is cause for at least some concern.

As shown in Figure 6, within the moderate suspicion group, nearly half of the comments (48.2 percent) include three suspect phrases. While increased numbers of suspect phrases does imply an increased level of suspicion, the presence of even a single suspect phrase should not be ignored. Although some high-frequency phrases like "everyone needs a little help from time to time,"

Figure 6: Distribution of Moderate Group Suspect Phrase Occurrences



found in 142 comments, could reasonably turn out to be a case of naturally occurring duplicates, other suspicious phrases are more unusual, increasing the likelihood that an organization or computer algorithm was involved in the comment creation. For example, the appearance of 434 unconnected individuals all deciding to participate in the relatively obscure e-Rulemaking process to express opposition to a proposed regulation for payday lenders by stating that "the internet is an amazing place with tons of information" using the exact same wording and punctuation strains any credible explanation as a natural phenomenon.

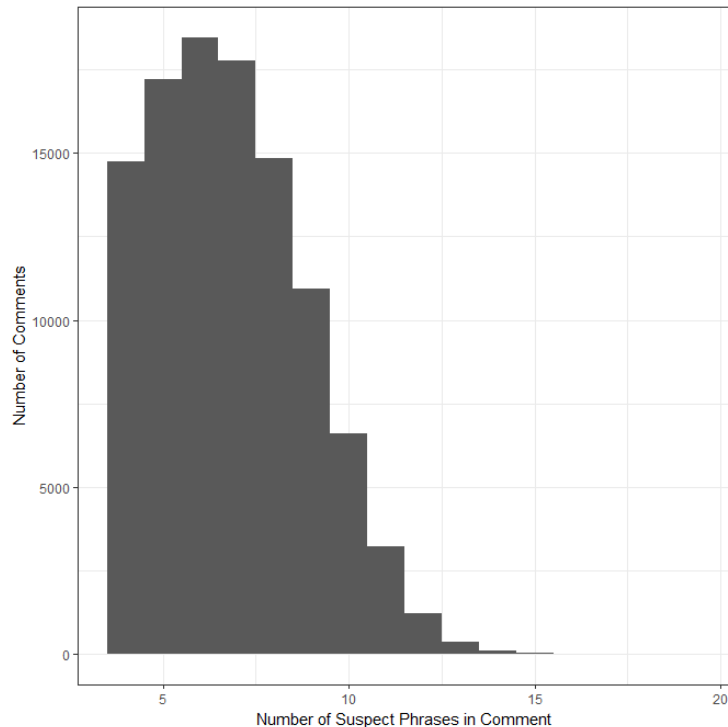
4.3.3. High Suspicion Comments

Comments were categorized as highly suspicious based on the presence of four or more suspect phrases. As shown in Figure 7, which excludes outliers for readability, the

median number of phrases identified in a single comment is seven. However, there are a small number of comments that include over 20 phrases each, up to a maximum of 27 suspect phrases in a single comment.

When comparing the content of high suspicion comments to each other, several other characteristics, highlighted in Figure 8, become immediately

Figure 7: Distribution of High Group Suspect Phrase Occurrences



apparent. First, there is the use of the suspicious phrases themselves. These phrases appear at varying points within the comment text and are often paired before or after unrelated examples or stories that are themselves suspicious phrases that appear in hundreds of other comments as well. Many of the suspect comments also include highly similar phrases that show more sophisticated attempts to mask the duplication by slightly rephrasing the sentence or applying synonyms. Finally, each suspect comment also contains a similar core message on the proposed Payday Rule itself. Taken alone in a single pair, these characteristics would be concerning, but could conceivably be coincidental. However, these same characteristics appear in tens of thousands of comments submitted on the Payday Rule; providing strong circumstantial evidence that these comments originate from a centralized source rather than from real individuals independently expressing their opinions.

Figure 8: High Suspicion Comments Example

Comment: CFPB-2016-0025-43585	Suspicious Characteristics	Comment: CFPB-2016-0025-9685
Submitted By: Selena Morales Submitted As: e-Regulations.gov web form Total Characters: 806 <p>Every member of my family has a phone. It would be great if everyone paid the bill too, but that's not the case. When someone goes over their coverage, money gets tight. For me, a pay day loan was able to help relieve some stress until the next month. I do not think the government should place limits on the number of cash advances a store can give a person. It is already difficult for people like me to get a loan and you should not make it tougher. These loans have been helpful in the past and I hope to use them in the future under these new rules. Please consider the consequences. I'm angry that you are trying to change the rules for payday loans so that I might not be able to get them when I need to. I need access to cash and don't think the government should take this away from me.</p>	<p>Unrelated examples paired without a transition</p> <p>Exact phrase used in hundreds of comments</p> <p>Similar statements with minor phrasing changes</p> <p>Similar core message on proposed rule</p>	Submitted By: Shakeria Austin Submitted As: e-Regulations.gov web form Total Characters: 941 <p>I recently got in an accident and I didn't know how I would be able to afford the repairs. I decided to get a payday advance loan and was so happy they were able to get me the money I needed. They really helped me out. Every member of my family has a phone. It would be great if everyone paid the bill too, but that's not the case. When someone goes over their coverage, money gets tight. Pay day loans help relieve some stress until next month. I don't think the government should be involved in my personal finances. The new rule by the CFPB to cap the number of days I can have a payday loan would limit my ability to get a loan at a time when I need one. I worry about where I would get help because I don't qualify for a traditional loan and payday loans are really my only option to borrow money. I ask that you please take everything into consideration as you finalize the rule for payday loans. Please change the rule.</p>

4.4. Group Characteristics by Suspicion Level

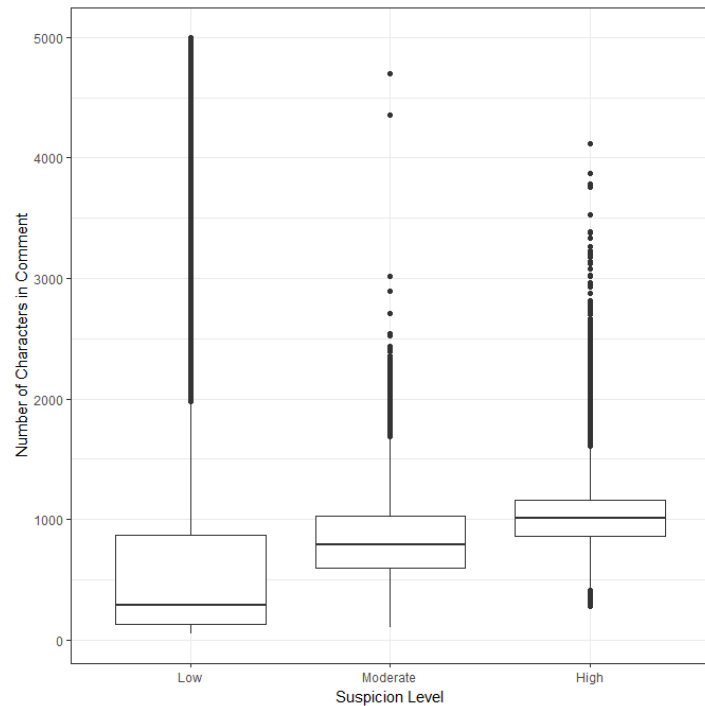
In addition to the number of suspect phrases that occur in a comment, the suspicion group levels demonstrate differences in other characteristics that could be used to help federal agencies and researchers target additional duplicate identification efforts.

4.4.1. Distribution of Comment Lengths by Suspicion Level

Figure 9, which excludes outliers for readability, demonstrates clear differences in the distribution of comment lengths between the low, moderate, and highly suspicious comment groups. Unsurprisingly, the low group displays the broadest range of comment lengths, from 50 to over 500,000 characters. At 294 characters, the median comment length in this group is the lowest of all three groups, which indicates that low suspicion comments are generally shorter than more suspicious comments. This finding makes some intuitive sense.

Relatively brief comments, which typically express only general support or opposition to the rule, are unlikely to be given much weight by CPFB in the rulemaking process as they do not provide any substantive recommendations for changes or improvements to the proposed rule itself. Therefore, while comments with low character counts may provide

Figure 9: Distribution of Comment Length by Suspicion Level



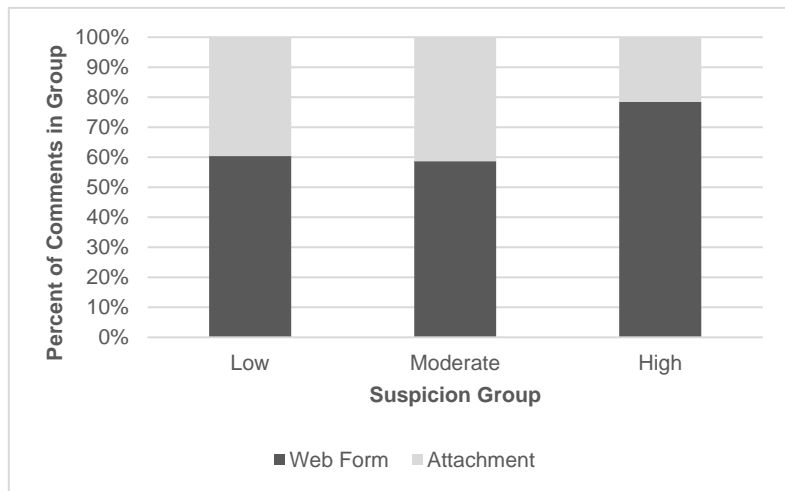
duplicative sentiments, it seems unlikely that an organization acting in bad faith to intentionally create and submit large numbers of comments on the behalf of non-existent individuals would choose to produce them in such a format. The character count distribution of the moderate group is narrower than seen with the low group and has a median character count of 793. However, this group also includes several outliers that go as high as 81,160 characters. The highly suspicious group shows the least diversity in terms of length. It has the highest median character length at 1,012 characters and a more compact range without any extreme outliers like those seen in the other two groups.

4.4.2. Distribution of Comment Submission Method by Suspicion Level

When looking at the comment submission method, a clear difference appears between the high suspicion group and the low to moderate groups. As shown in Figure 10, about 60 percent of comments in the low and moderate groups were submitted as text directly into the

Regulations.gov web form while about 30 percent of comments include an attachment. In comparison, nearly 80 percent of the high suspicion group comments were submitted to the Regulations.gov web form and only about 20 percent as attachments.

Figure 10: Distribution of Comment Submission Method by Suspicion Level



Attachments may consist of either an email that was received and added to the comment set by CFPB or an attachment that was directly uploaded to Regulations.gov by a user. These attachments may contain the full body of the comment or supplementary materials in addition to text entered into the web form. However, the API dataset does not provide the ability to distinguish between those types of attachments using an automated method.

4.4.3. Distribution of Submitter Types by Suspicion Level

When reviewing the suspicion level groups by submitter type, clear differences appear between the low suspicion group and the moderate to high groups. As shown in Figure 11, comments submitted with a specific organization name included in the relevant Regulations.gov metadata field are almost exclusively found in the low suspicion group.²⁵

²⁵ The small number of comments in the non-profit/religious/advocacy group and payday/installment lender categories identified as moderately and highly suspicious were found to represent a type of form letter in which each comment begins with the same suspect phrase followed by unique content that implies individuals were given a letter template including the identified phrase at the top and then added their own thoughts.

This finding indicates that organizations are less likely to submit intentionally duplicative comments (outside of clearly identifiable mass mailings and form letters) when their name is attached to the comment. This is likely due to the fact that organizations do not want to damage their standing publicly or with the key regulators responsible for their industry by posting comments found that have little value or that appear intentionally designed to disrupt the regulatory process.

Figure 11: Distribution of Submitter Types by Suspicion Level

Suspicion Level	Submitter Type						
	Individual	Government Organization/ Representative	Non-Profit/ Religious/ Advocacy Group	Payday/ Installment Lender	Professional/ Industry Association	Traditional Bank/ Credit Union	Other Business
Low	52,596	159	1,208	2,545	101	138	74
Moderate	21,802	-	63	25	-	-	-
High	105,472	-	91	7	-	-	-

5. CONCLUSION

As this research demonstrates, there is clear evidence that high volumes of centrally-created comments disguised to appear as if they represent the opinions of individual citizens are indeed being deployed to disrupt the regulatory commenting process for at least some high-profile rules. Unfortunately, there is every reason to believe that these attacks will only continue to increase in frequency and sophistication as industry groups, foreign interests, or other bad actors seek to sway federal regulations towards their preferred outcomes.

Organizations acting in bad faith to submit intentionally duplicative comments can profit in two primary ways through these efforts. First, if the fraudulent comments go undetected, they can influence agencies to change the proposed rules in ways that directly benefit that organization. However, even if the duplicative comments are identified and discarded by the agency without resulting in any substantive changes to the proposed rule, the perpetrators can still benefit simply by delaying the process. For example, in the case of the CFPB Payday

Rule, it took over a year for the Bureau to complete its analysis of the comments and release the final rule, which was published to the Federal Register on November 17, 2017 and is scheduled to become effective January 16, 2018.²⁶ During that time, leadership of the Bureau transitioned to an Acting Director who has openly expressed support for cancelling the rule before it can be enforced, which would be a significant win for the payday loan industry.²⁷

While the type of exact and near phrase duplication identified in this analysis can be found relatively easily through basic NLP approaches, ongoing technological advances in the area of robotics process automation (RPA) and similar tools will make increasingly sophisticated duplicative comment creation even easier and cheaper to perform. As these fraudulent comments become more difficult to identify through automated means, agencies will be required to dedicate increasingly complex and costly resources towards combating them. However, there are several practical, preventative steps that Regulations.gov and federal agencies could take immediately to help mitigate this threat.

First, the eRulemaking Program should take immediate steps to strengthen and protect Regulations.gov from spam attacks by requiring the use of registered accounts using real names paired with a valid email address or phone number in order to submit a comment. Before the account is activated, users should be required to respond to a verification email or text message sent to their provided contact information to validate that the account information is accurate. The eRulemaking Program should also make minor adjustments to

²⁶ "Payday, Vehicle Title, and Certain High-Cost Installment Loans Final Rule," Regulations.gov, accessed November 17, 2017, <https://www.regulations.gov/document?D=CFPB-2016-0025-211926>.

²⁷ Kevin McCoy, "Mick Mulvaney: Payday lending campaign contributions pose no conflicts of interest," *USA Today*, December 4, 2017, <https://www.usatoday.com/story/money/2017/12/04/mick-mulvaney-payday-lending-campaign-contributions-pose-no-conflicts-interest/920056001/>.

its user interface that would require commenters to more explicitly indicate whether they are submitting a comment on behalf of themselves as an individual, on behalf of themselves as part of an organized campaign, or as an authorized representative on behalf of an organization.

Second, Regulations.gov should specifically target computer-generated comment submissions by applying Completely Automated Public Turing Test To Tell Computers and Humans Apart (CAPTCHA) methods before accepting each comment. While not perfect, these simple methods would force organizations attempting to submit large volumes of auto-generated comments to spend more time and money in doing so by requiring investment in sophisticated programs capable of fooling the CAPTCHA technology or by requiring humans to submit each comment individually.

Once these spam prevention improvements are in place, federal agencies posting proposed rules for public comment should encourage the use of Regulations.gov to the maximum extent possible over other comment submission types. As a centralized system specifically designed for this process, Regulations.gov reduces the administrative burden on federal agencies from managing huge numbers of email or physical submissions. Regulations.gov also captures important comment metadata that can be helpful for researchers attempting to identify patterns in the data and has the ability to apply validation controls to improve the quality of submitted comments and metadata at the time of the comment creation.

While the three approaches above would discourage those acting in bad faith from submitting high volumes of auto-generated comments to the Federal Register by increasing the difficulty and costs of doing so, the high stakes and huge financial impacts that can be

caused by changes in regulations make it unlikely that preventative measures alone will completely eliminate such activities. Therefore, federal agencies should also be prepared to conduct a comprehensive fraud detection analysis on any proposed rule that is expected to generate high comment levels prior to performing their more substantive content analyses. As shown in this research, application of even simple duplicate identification techniques using low-cost computing resources (i.e., a single laptop computer) can prove effective at identifying whether there may be cause for concern in comment sets.

Finally, any federal agencies that do detect suspected cases of fraud in the comments submitted to their proposed rules should engage relevant law enforcement agencies to assist in discouraging future attacks by identifying and punishing the perpetrators. For example, the New York State Attorney General announced that his office has launched a criminal investigation into the comments posted to the FCC's proposed repeal of the net neutrality rules on the basis that at least tens of thousands of comments appear to use the names and email addresses of individuals who are deceased or who otherwise confirmed that they did not participate in the process; a form of identity theft that violates New York state law.²⁸ If state or federal law enforcement agencies are ultimately successful in exposing the creators of intentionally duplicative comments that cross the line from obnoxious to criminal, it could mark a turning point in the broader fight against digital attacks on key regulatory processes by increasing the costs and risks for potential future perpetrators beyond their tolerance levels.

²⁸ Hamza Shaban, "FCC commissioner, New York attorney general call for delay of net neutrality vote over fake comments," *The Washington Post*, December 4, 2017, https://www.washingtonpost.com/news/the-switch/wp/2017/12/04/fcc-commissioner-new-york-attorney-general-call-for-delay-of-net-neutrality-vote-over-fake-comments/?utm_term=.741be091f5fa.

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APPENDIX: TOP 100 SUSPECT PHRASES

Number of Comments	Sentence
727	your effort to limit my financial choices will result in new hardships for me which you do not propose to resolve.
715	your assumption that i am incapable of making financial decisions that make sense for me and my family is offensive and wrong.
608	i, not washington, should decide how those needs are met.
608	it is important to keep this loan option as it is.
604	do not make changes that will give us nowhere else to turn.
602	i hope you understand where i am coming from and overturn it.
602	the new rule would be too restrictive and hurt people, like me, who use these loans.
602	this is an important option for me to have available, and i'm sure many other people feel the same exact way.
596	you shouldn't be trying to limit my ability to get a loan.
594	i could not imagine what would happen without them.
594	it is wrong for the government to try to take away my financial choices.
592	while there are some months that it is manageable, there are other times where my bill is through the roof.
592	you should understand how important this loan has been for me.
590	i urge the government to change their new rule against these loans.
589	i appreciate you allowing us to comment to change the rule.
588	where do you expect people to go when they need some extra cash at the end of the month?
586	it doesn't make any sense for you to limit our choices with this rule.
583	they help many people just like me.
582	i hope that you understand what i am talking about.
582	it is important to keep them available as they are and not finalize this awful rule.
580	the government needs to understand that this rule will only hurt the citizens, not help us.
578	this loan really helped me out.
574	those bills are important and need to be paid on time.
573	the consumer financial protection bureau needs to make sure it is actually protecting the consumers.
572	the consequences if we didn't pay would be much worse.
571	this loan has made a true impact in my life and i want to see the same loans available in the future.
565	i appreciate you taking the time to read this.
562	life is full of surprises and i can't always be financially prepared.
558	many families use these loans when they are in need and don't have any other choices to get help.
556	i don't feel like the consumer financial protection bureau is protecting me.
556	if we have a bad season, they cost even more than usual.
551	i hope you will see that these loans work for me.
549	these loans have really been a life saver for so many people, including me.

Number of Comments	Sentence
549	this rule will be harmful to all of us who have come to know and trust these loans.
548	i am sure many others feel similarly, and i hope that this option is not taken away from us.
547	your rule would make it nearly impossible to get a loan, and i hope you don't take this option away from us.
545	your rule is too much and is not needed.
530	don't let this rule go forward.
527	the price of powering my home gets more and more expensive.
524	when unexpected things come up that cost money, it makes it harder for me to pay my utilities on time.
524	you should be helping people like me, not trying to make life more difficult.
523	instead, they will be hurt if they lose access to the loans that get them through life's everyday challenges.
522	there is a true need for cash advances, and the new proposal from the cfpb would restrict access to them.
518	i urge you to reconsider the proposal targeting these types of loans.
512	the only thing worse than paying for a power bill, is paying for a late power bill.
500	i swear they charge me whatever they want.
486	i would highly recommend these loans to anyone else in a similar situation.
480	it should be a choice that is open and available to everyone.
479	every month my phone bill is different.
473	all it takes is a few late bills to negatively impact your credit score.
466	there are times when i need to balance that cost with a car repair or a doctor's visit.
462	often times, this service is not free and can be rather expensive for me.
462	sometimes my bill is a little higher than i have budgeted for and i need a little help.
460	this loan really helped me out when i needed it.
460	this service was very helpful when i needed an extra push.
457	it has made my life easier to know that i don't have to worry about affording groceries.
455	i wish power bills didn't exist, but unfortunately they do, and if you don't pay them, you lose your power.
454	i object to any government action which attacks my financial freedom as the proposed rules will do.
449	you should keep them available for the many people that depend on them.
444	i sometimes wondered how i would be able to pay for my high power bill, especially in the hot summer and cold winters.
438	this will only hurt the many families that use these loans.
436	it is important for me to pay my phone bills so i can keep in touch with my family.
436	this loan was an easy way for me to afford everything without having to lose connection.
435	these families will be devastated if these loans are suddenly taken away because of this rule.
434	the internet is an amazing place with tons of information.
432	groceries are a good example of this.
432	no one wants to bounce a check on a cable bill.

Number of Comments	Sentence
431	where would i go if these loans did not exist?
430	these loans have helped me afford the cost of groceries and put food on the table.
429	the cfpb has posted a new rule that will hurt many families across the country that rely on cash loans to make ends meet.
427	i use my phone to stay in touch with friends and family.
426	having internet at home makes it so that i can keep in touch with my family across the country.
426	these loans really helped me to be able to provide for my family and i hope to continue to use these loans whenever we need them.
425	without it, i would be completely in the dark.
424	it is easy to cover my bills most months.
422	this would hurt many hard-working americans and should not be allowed to go into effect.
421	when someone goes over their coverage, money gets tight.
420	there is the cost of gas, admission and popcorn!
419	it would be great if everyone paid the bill too, but that's not the case.
418	every once in a while though, my bill can skyrocket.
418	that is why i watch my movies on cable.
416	it was one of the best decisions i've made for my family.
416	putting food on the table is a necessity.
412	my phone is important to me and i have it with me at all times.
411	these loans are helpful to many people like me and should stay just the way they are.
410	it is necessary for good performance in school.
410	the cost of providing for my family is always increasing.
409	i had no idea they would charge me as much as they did.
408	growing children mean growing grocery costs.
407	i hope the government does not restrict the loans to a point where we can't get them anymore.
407	it is wrong for the cfpb to limit the number of days that i can use these loans because i might not be able to get a loan when i'm in desperate need of some money.
405	i don't like it when i have to worry about being able to pay for a trip to the grocery store.
405	i keep up with news through the internet.
403	sometimes even some of the most basic expenses can be hard to cover.
402	most of the time my internet bill is the same every month.
401	it helps keep my finances in order and also allows my family to stay in contact.
401	the government's new regulations will have terrible consequences for those of us that use these loans.
399	every member of my family has a phone.
399	i need these loans in order to continue to be able to watch tv at night.
399	life is full of surprises, but my checking account is not always ready.

CURRICULUM VITA

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